

WHAT IS CLAIMED IS:

1. A pneumatic microfluid driving system, comprising:
5 a servo-device for providing all kinds of combination models of airflow groups;

an air gallery structure, constructed inside the micro-reaction module for receiving said airflow; and

a connecting channel, co-constructed inside the micro-reaction module for connecting said air gallery structure and the reaction area on the micro-reaction module, and circulating airflow to drive fluid.

15 2. A pneumatic microfluid driving system as in claim 1, wherein said servo-device comprising:

an air compressor for providing all kinds of airflow combination models having various volumes and directions; and
20 a buffer tank for stabilizing airflow sent out by said air compressor.

25 3. A pneumatic microfluid driving system as in claim 1, wherein said air gallery structure comprising:

a suction component for sucking out fluid on the micro-reaction module; and

an exclusion component for excluding fluid on the micro-reaction module.

35 4. A pneumatic microfluid driving system as in claim 3, wherein said suction component comprising:

an air gallery for receiving airflow provided by said servo-device; and

a micro-channel for connecting said air gallery to introduce airflow.

5. A pneumatic microfluid driving system as in claim 3, wherein said exclusion component comprising:

an air gallery for receiving airflow provided by said servo-device; and

a micro-channel for connecting said air gallery to channel airflow.

10 6. A pneumatic microfluid driving system as in claim 1, wherein said connecting channel can be of T-shape connection or parallel connection.

15 7. A pneumatic microfluid driving system as in claim 6, wherein said parallel connection can be of suction type, exclusion type or intermediate type of connecting channels.

20 8. A pneumatic microfluid driving system as in claim 1, wherein said reaction area has microfluid channels.

25 9. A pneumatic microfluid driving system as in claim 1, wherein the end of said connecting channel can be connected to said microfluid channel of said reaction area.

10. A pneumatic microfluid driving system as in claim 1, wherein said micro-reaction module refers to the miniaturized chip whereon various kinds of reaction or analysis can be applied.

25 11. A pneumatic microfluid driving system as in claim 10, wherein said miniaturized chip refers to Lab-on-a-chip, biochip, etc.

30 12. A pneumatic microfluid driving system as in claim 1, wherein said air gallery structure, said connecting channel and said reaction area can all be integrally constructed on the micro-reaction module.

35 13. A pneumatic microfluid driving system as in claim 1, wherein said airflow combination models refer to the velocity combinations of inlet airflow inputted into said suction component and said exclusion component of said air gallery structure.

14. A pneumatic microfluid driving system, comprising:

a servo-device for providing all kinds of combination models of airflow;

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an air gallery structure for receiving said airflow; and

a connecting channel for connecting said air gallery structure and the fluid area, and circulating airflow to drive fluid.

15. A pneumatic microfluid driving system as in claim 14, wherein said servo-device comprising:

an air compressor for providing all kinds of airflow combination models having various volumes and directions; and

a buffer tank for stabilizing airflow sent out by said air compressor.

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16. A pneumatic microfluid driving system as in claim 14, wherein said air gallery structure comprising:

a suction component for sucking out fluid; and

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an exclusion component for excluding fluid.

17. A pneumatic microfluid driving system as in claim 16, wherein said suction component comprising:

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an air gallery for receiving airflow provided by said servo-device; and

a micro-channel connecting said air gallery to introduce airflow.

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18. A pneumatic microfluid driving system as in claim 16, wherein said exclusion component comprising:

an air gallery for receiving airflow provided by said servo-device; and

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a micro-channel for connecting said air gallery to introduce airflow.

19. A pneumatic microfluid driving system as in claim 14, wherein said connecting channel can be of T-shape connection or parallel connection.

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20. A pneumatic microfluid driving system as in claim 19, wherein said parallel connection can be of suction type, exclusion type or intermediate type of connecting channels.

10 21. A pneumatic microfluid driving system as in claim 14, wherein the end of said connecting channel can be connected to said fluid area.

15 22. A pneumatic microfluid driving system as in claim 21, wherein said fluid area refers to a microfluid channel.

23. A pneumatic microfluid driving system as in claim 14, wherein said air gallery structure, said connecting channel and said fluid area could all be integrally formed.

20 24. A pneumatic microfluid driving system as in claim 14, wherein said airflow combination models refer to the velocity combinations of inlet airflow inputted into said suction component and said exclusion component of said air gallery structure.

25 25. A pneumatic microfluid driving method, comprising:

utilizing said servo-device for providing all kinds of combination models of airflow;

30 introducing said airflow into said air gallery structure; and

driving fluid in the microfluid channel, through airflow circulating in said connecting channel, to cause minute microfluid movement effects like proceeding, receding and stopping.

35 26. A pneumatic microfluid driving method as in claim 25, wherein said air gallery structure comprises a suction component and an exclusion

PNEUMATIC MICROFLUID DRIVING METHOD

component.

27. A pneumatic microfluid driving method as in claim 25 or claim 26, wherein, by utilizing the Bernoulli's equation, the operation of suction and exclusion of airflow can be controlled via the structural design of said suction component and said exclusion component of said air gallery structure.

5 28. A pneumatic microfluid driving method as in claim 25, wherein said combination models of airflow refer to the combinations of inlet airflow velocity (V_s) in the suction component, and inlet airflow velocity (V_e) in the exclusion component.

10 15 29. A pneumatic microfluid driving method as in claim 1 or claim 14, wherein said fluid refers to samples or reagents.

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